# A NEW SPECIES OF *MONOGRAPTUS* FROM THE ROAD RIVER FORMATION, YUKON

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ABSTRACT. *Monograptus yukonensis* sp. nov. is described from the uppermost part of the Road River Formation where it occurs with a rich brachiopod fauna. The equivalent of this zone in Thüringia, Germany, is believed to lie in the $e\beta_2$ or $e\gamma$ Stufe. The brachiopod fauna has a Gedinnian aspect.

IN a paper discussing the zonation of Ordovician and Silurian graptolites of northern Yukon, the writers (Jackson and Lenz 1962, pp. 43–44) referred to this new species as *Monograptus* sp. E. On account of poor preservation of the material on hand at that time we considered this species to have biform thecae. The acquisition of additional, better-preserved material suggests this is not so. The present paper is a description of the new species.

*Monograptus yukonensis* sp. nov.

Text-fig. 1A, B

*Monograptus* sp. E Jackson and Lenz, 1962, pp. 43–44.

*Diagnosis.* Rhabdosome J-shaped with short dorsally curved proximal portion and straight distal portion, widening from 0·8 mm. at first theca to maximum of about 1·8 mm. (average 1·5), thecae uniform, of *uncinatus* type, 10 in 10 mm.

*Description.* Rhabdosome up to 45 mm. long (average 20–30 mm.), with short, dorsally curved proximal portion which affects a variable number of the first nine thecae. The rhabdosome widens from 0·8 mm. across first thecal aperture to an average maximum width of 1·5 mm. within 6 to 10 mm.

Thecae are uniform of *uncinatus* type, appear hooked especially at the proximal end and some distal thecae possess a hood-like ('hauben') process over the thecal aperture, inclined between 15 to 25 degrees, overlap one-third proximally increasing to two-thirds to three-fourths distally; number $8\frac{1}{2}$ to 10 in 10 mm. Fraction of rhabdosome width occupied by free portion of thecae varies from one-half proximally to one-quarter to one-fifth distally.

Sicula is 1·4 mm. long in paratype E.

*Discussion.* The description is based on over fifty specimens from six localities in northern Yukon. All of the material, with the exception of paratype D, is preserved as a carbonaceous film in shale.

*Age.* The zone of *M. yukonensis* on Royal Creek and the tributary of Road River occurs about 700 feet and 1,100 feet respectively above the early Lower Ludlovian zone of

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| *Measurements.* | *Holotype* | *Paratype A* | *Paratype B* | *Paratype C* | *Paratype D* | *Paratype E* |
|---|---|---|---|---|---|---|
| Length of rhabdosome | 45 | 22 | 23 | +44 | +17 | 22 |
| *Width at theca 1 *a* | 0·4 | .. | 0·4 | 0·5? | 0·4 | 0·4 |
| *b* | 0·7 | .. | 0·9 | 0·9? | 0·7 | 0·7 |
| *Max. width *a* | 1·4 | 1·4 | 1·3 | 1·1 | 1·0 | 1·1 |
| *b.* | 1·8 | 1·7 | 1·8 | 1·5 | 1·4 | 1·5 |
| Thecae in first 10 mm. | $11\frac{1}{2}$ | 10 | $9\frac{1}{2}$ | 11 | 12 | 11 |
| ,, second 10 mm. | 10 | 10 | 8 | 10 | .. | 10 |
| ,, third 10 mm. | 9 | .. | .. | $9\frac{1}{2}$ | .. | .. |
| Thecal angle | .. | .. | .. | 25° | 20° | 18° |
| Thecal overlap | .. | $\frac{2}{3}$? | $\frac{2}{3}$? | $\frac{2}{3}$? | $\frac{2}{3}$–$\frac{3}{4}$ | $\frac{2}{3}$? |
| Length of sicula | .. | .. | .. | .. | .. | 1·4 |
| No. thecae involved in proximal curve | 4 | 4 | 1 | 6 | 9 | 9 |

* *a* = width excluding thecal aperture; *b* = width across thecal aperture.

*M. nilssoni*. Jackson and Lenz (1962, p. 43) tentatively assigned the *yukonensis* Zone to the Upper Ludlovian (sensu Jaeger, 1959) on the basis of the association of the index fossil with one fragmented specimen of *M.* cf. *hemiodon* Jaeger. Subsequent collecting on Royal Creek has brought to light many well-preserved specimens of *M.* cf. *hemiodon* in beds along strike but demonstrably equivalent to *M. yukonensis*-bearing strata. In Thüringia, *M. hemiodon* appears to be restricted to the lower part of the *M. hercynicus* Zone in the e$\gamma$ Stufe which Jaeger (1962) now considers to be post-Ludlow.

A somewhat different age assignment is suggested by Dr. Hermann Jaeger, Germany, who kindly examined a photograph of the holotype. Dr. Jaeger states that the monograptid 'most likely (practically with certainty) pertains to a still undescribed form hitherto known to me only from Polish deep borings drilled on the border of Fennosarmatia. In Poland the species occurs in the zone of *Monograptus ultimus*, this is the basal zone of the Bohemian stage of e$\beta_2$ (Přidoli Beds). . . .'

In the Royal Creek section the shales bearing *M. yukonensis* are interbedded with carbonates carrying a rich brachiopod and coral fauna. Some of the silicified brachiopods were kindly examined by Drs. J. G. Johnson and A. J. Boucot at the California Institute of Technology. They report the following: ambocoeliid gen. indet., cf. *Ambocoelia praecox* Kozlowski, *Anastrophia* cf. *magnifica* Kozlowski, *Atrypa* '*reticularis*' (Linnaeus), aff. '*Atrypa*' *audax* Barrande, *Spinatrypa*, carinatinid genera, *Cymostrophia?* cf. *costatula* (Barrande), *Cyrtina*, dolerorthid gen. nov. cf. *Dolerorthis* and *Ptychopleurella*, *Isorthis* or *Schizophoria*, *Latonotoechia?*, orthotetaceid gen. indet., *Resserella?* cf. *elegantuloides* Kozlowski, *Sieberella* or *Gypidula*, cf. *S. sieberi* (v. Buch), triplesiid gen. indet. Regarding the age of the fauna, they conclude that it is post-Ludlow and probably early Gedinnian.

*Comparison*. *Monograptus yukonensis* cannot be confused with any other monograptid known to us from Canada. The species bears some resemblance to those European forms of *M. hercynicus* Perner having proximal dorsal curvature (see Jaeger, 1959, Tafel 1, fig. 10; Tafel 2, fig. 5; Tafel 3, fig. 1) but differs in the shorter length, smaller width, pronounced dorsal curvature of proximal portion of rhabdosome and the closer thecal spacing.

*Occurrence.* The species is known to us only from northern Yukon where it is a useful index fossil in the uppermost part of the Road River Formation. It is recorded from six widely separated localities, namely, a tributary of Road River (66° 44′ N., 135° 46′ W.); Road River (66° 36′ N., 135° 33′ W.); a small tributary of Peel River (65° 55′ 30″ N., 135° 53′ 46″ W.); Peel River (65° 53′ 20″ N., 135° 52′ 55″ W.); Ogilvie River (65° 28′ 30″ N., 138° 13′ W.); and Royal Creek (64° 45′ 52″ N., 135° 10′ W.), where it occurs through 200 feet of beds.

*Material.* Holotype, U. of A. No. 441, uppermost part of 'Road River Formation', 10 feet below top of ridge, on south-west side of cirque at head of Royal Creek, Yukon (64° 45′ 52″ N., 135° 10′ W.). Collectors A. C. Lenz and O. Dixon, California Standard Company, 1962.

Paratype A, U. of A. No. 442, same locality as holotype. Collectors A. C. Lenz and O. Dixon, California Standard Company, 1962.

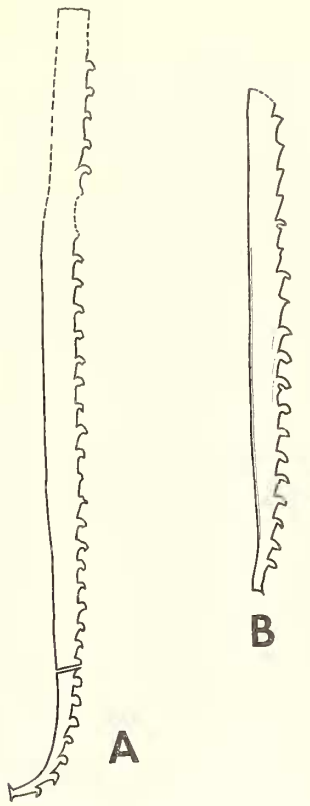
Paratype B, U. of A. No. 443, Road River Formation, 250 feet below top, tributary of Road River, Yukon (66° 44′ N., 135° 46′ W.). Collector D. E. Jackson, 1959.

Paratype C, U. of A. No. 444, same locality as paratype B. Collector W. Richmond, Pan American Petroleum Corporation, 1959.

Paratype D, U. of A. No. 445, Road River Formation, 196 feet below top. Road River, Yukon (66° 36′ N., 135° 33′ W.). Collector J. F. S. Anderson, Pan American Petroleum Corporation, 1959.

Paratype E, U. of A. No. 446, Road River Formation, 70 feet below top. Small tributary of Peel River, Yukon (65° 55′ 30″ N., 135° 53′ 46″ W.). Collector K. Sanderson, Pan American Petroleum Corporation, 1958.

*Repository.* The type-series has been deposited with the Department of Geology, University of Alberta, Edmonton.




TEXT-FIG. 1. *Monograptus yukonensis* sp. nov. A, Holotype, U. of A. No. 441, ×3. B, Paratype B, U. of A. No. 443, ×3.

## REFERENCES

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